CMA MILESTONES IN U.S. CHEMICAL WEAPONS HISTORY

The U.S. Army Chemical Materials Activity (CMA) leads the world in chemical weapons destruction with a demonstrated history of safely storing, recovering, assessing and disposing of U.S. chemical warfare materiel, and meeting U.S. treaty obligations.

The Early Years

1960s and before

The United States developed chemical weapons in response to Germany's use of them against Allied soldiers in WWI, 1914-1918. The weapons are securely stored at U.S. military installations at home and abroad.

Edgewood Arsenal, Maryland produces mustard and phosgene, but the arsenal is not large enough to store the agent. New installations are constructed in Huntsville, Alabama, Denver, Colorado, Pine Bluff, Arkansas, and Tooele, Utah.

After World War II ends in 1945, the United States produces nerve agents GB at Rocky Mountain Arsenal near Denver and VX in Newport, Indiana.

During the 1960s, the U.S. Army destroys chemical weapons using sea disposal, open-pit burning and land burial. In 1969, the National Academy of Sciences recommends that sea disposal be avoided.

In the late 1960s President Nixon halts the production of chemical weapons.

Stored chemical weapons

1971

The United States finishes transferring chemical munitions from Okinawa, Japan, to Johnston Island, located about 800 miles from Hawaii, in September of 1971.

1972

The Army forms the U.S. Army Materiel Command's (AMC's) Program Manager for Demilitarization of Chemical Materiel, headquartered at Picatinny Arsenal, New Jersey.

The Army develops environmentally sound chemical weapons disposal methods using incineration and chemical neutralization.

Project Eagle incinerates six million pounds of mustard agent and neutralizes eight million pounds of nerve agent GB (sarin) at Rocky Mountain Arsenal, Colorado, between 1972 and 1976.

1973

The organization relocates to Edgewood Arsenal (now the Edgewood Area of Aberdeen Proving Ground (APG), Maryland).

1975

Organizational name is changed to Department of the Army Project Manager for Chemical Demilitarization and Installation Restoration.

1978

Organizational name is changed to U.S. Army Toxic and Hazardous Materials Agency (USATHAMA).

1979

The Army constructs and begins operating the Chemical Agent Munitions Disposal System (CAMDS), a pilot incineration facility located at what is now the Deseret Chemical Depot (DCD), Utah. The Army tests disposal equipment and processes at the plant. More than

Pilot incineration facility in Utah

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1982–1990

91 tons of chemical agent are safely destroyed.

1982

The United States starts construction of the Integrated Binary Production Facility at Pine Bluff Arsenal (PBA), Arkansas. Binary chemical weapons were designed to mix two non-lethal chemicals in flight to a target to form nerve agent. The binary weapons program led to successful chemical weapons elimination talks between the

Pine Bluff Integrated Binary Production Facility

United States and the Soviet Union later in the decade.

1985

Construction of a demilitarization facility begins on Johnston Island in the Pacific Ocean.

1986

Public Law 99-145 requires the safe destruction of the U.S. unitary chemical weapons stockpile. It also requires disposal facilities to be cleaned, dismantled and disposed of according to applicable laws and regulations. The stockpile is stored at eight military installations within the continental United States—APG, Maryland; PBA, Arkansas; DCD, Utah; Umatilla Chemical Depot (UMCD), Oregon; Newport Chemical Depot (NECD), Indiana; Anniston Army Depot (ANAD), Alabama; Blue Grass Army Depot (BGAD), Kentucky; Pueblo Chemical Depot (PCD), Colorado—and, on Johnston Island in the Pacific Ocean.

USATHAMA's chemical weapons management functions become the Program Manager for Chemical Munitions (Demilitarization and Binary). USATHAMA becomes the U.S. Army Environmental Center.

1987

USATHAMA completes construction on Johnston Island.

1988

The Army and the Federal Emergency Management Agency establish the Chemical Stockpile Emergency Preparedness Program (CSEPP) in response to Public Law 99-145, which requires added

CSEPP training exercise

public protection for communities around the chemical stockpiles.

1988–1990

The Army destroys BZ agent at PBA.

1989

Organizational name is changed to Program Executive Officer-Program Manager for Chemical Demilitarization.

Construction begins on Tooele Chemical Agent Disposal Facility (TOCDF) at DCD.

U.S. Secretary of State James Baker and former Soviet Union Foreign Minister Eduard Shevardnadze sign a Memorandum of Understanding (MOU) on chemical weapons in Jackson Hole, Wyoming. The MOU calls for cooperation and information exchange between the two countries concerning chemical weapons capabilities. The two countries then sign an agreement to destroy much of their stockpiles, spurring international talks culminating in the international treaty known as the Chemical Weapons Convention (CWC).

1990

The Army's prototype full-scale disposal facility, Johnston Atoll Chemical Agent Disposal System (JACADS), begins destruction of the stockpile on Johnston Island, which accounts for more than 6 percent of the nation's original stockpile.

Chemical weapons from West Germany and a small number of recovered World War II-era chemical weapons from the Solomon Islands are shipped to Johnston Island.

Organizational name is changed to Program Manager for Chemical Demilitarization (PMCD).

Johnston Atoll Chemical Agent Disposal System, begins destruction in 1990

1991–1999

The United States halts all binary weapons programs in accordance with the American-Soviet MOU.

1991

Congress expands its chemical weapons destruction directive to include the disposal of non-stockpile materiel—items that are not part of the unitary chemical weapons stockpile.

1992

The U.S. Army Chemical Materiel Destruction Agency is established

Citizens' Advisory Commission

to consolidate responsibility for the destruction of chemical materials into one office.

Public Law 102-484 establishes Citizens' Advisory Commissions at each continental U.S. stockpile location. The state governor appoints seven members, with two more members from state government agencies responsible for chemical disposal program oversight.

In compliance with Public Law 102-484, the Army creates the Non-Stockpile Chemical Materiel Project

Recovered 4.2-inch mortar

(NSCMP) to develop systems to safely assess, treat and destroy five categories of chemical warfare materiel (CWM) that was not part of the declared stockpile: binary chemical warfare materiel, former chemical weapons production facilities, miscellaneous chemical warfare materiel, buried chemical warfare materiel and recovered chemical warfare materiel (RCWM).

1994

The U.S. Army Chemical Materiel Destruction Agency is renamed to the U.S. Army Chemical Demilitarization and Remediation Activity (CDRA) and placed under the U.S. Army Chemical and Biological Defense Command (CBDCOM).

The Army establishes the Alternative Technologies and Approaches Project to investigate alternatives to incineration technology for the safe disposal of bulk chemical agent stockpiles at APG and NECD.

1995

CDRA is separated from CBDCOM and renamed PMCD.

CSEPP is restructured to streamline procedures and enhance operational responsiveness.

1996

TOCDF at DCD, with 44 percent of the nation's original stockpile of nerve and blister agents, begins destroying chemical weapons.

Storage and maintenance of the U.S. stockpile continues to be carried out safely.

1997

The United States ratifies the CWC, agreeing to dispose of its unitary chemical weapons stockpile, binary chemical weapons, RCWM and former chemical weapons production facilities.

Public Law 104-208 funds a new, separately managed pilot program to identify and demonstrate alternatives to incineration technology for the disposal of assembled chemical weapons. The law establishes the Program Manager Assembled Chemical Weapons Assessment. The pilot program is intended to provide alternative disposal technology for the stockpiles at BGAD and PCD.

Construction begins on the Anniston Chemical Agent Disposal Facility (ANCDF) at ANAD and on the Umatilla Chemical Agent Disposal Facility (UMCDF) at UMCD.

1999

NSCMP Core Group forms to gain public input on the asssessment and treatment of RCWM.

Construction begins at Aberdeen Chemical Agent Disposal Facility (ABCDF) at APG.

NSCMP meets CWC requirement to destroy two categories of binary weapons components known as "excess other components" and "parity other components."

Construction begins at Pine Bluff Chemical Agent Disposal Facility (PBCDF) at PBA.

2000–2004

2000

JACADS completes destruction of its chemical weapons stockpile, destroying more than 412,000 chemical weapons, making it the first stockpile facility to complete its mission.

Last mine destroyed at JACADS

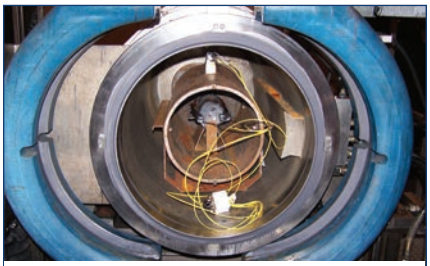
Construction begins on the Newport Chemical Agent Disposal Facility (NECDF) at NECD.

2001

NSCMP uses the Rapid Response System (RRS), a mobile system designed to safely treat Chemical Agent I Sets (CAIS) to treat approximately 700 items stored at DCD.

The Army begins studies to accelerate disposal operations in response to the terrorist attacks of September 11, 2001.

The United States meets the CWC treaty requirement to destroy 20 percent of the U.S. chemical weapons stockpile.



EDS treating round

NSCMP treats 10 sarin-filled bomblets recovered at Rocky Mountain Arsenal, Colorado, using the Explosive Destruction System (EDS) for the first time. The EDS is a transportable system designed to provide safe and environmentally responsible on-site treatment of RCWM.

2002

TOCDF completes destruction of all nerve agent GB (sarin) stored at DCD.

ANCDF completes disposal facility testing.

The Army announces plans to accelerate destruction of the chemical agent stockpiles at APG and NECD through redesign and construction of facilities.

Public Law 107-248 directs management of chemical demilitarization activities in Colorado and Kentucky to the Program Manager Assembled Chemical Weapons Alternatives.

EDS deploys to a formerly used defense site at Camp Sibert, Alabama, and disposes of one armed and fuzed phosgene-filled 4.2-inch mortar.

2003

PMCD merges with the stockpile storage mission within the U.S. Army Soldier and Biological Chemical Command to form the Chemical Materials Agency (CMA), to store, assess and dispose of chemical materials.

CMA is also tasked to work with state and local emergency response agencies for emergency preparedness activities in communities near stockpile sites for CSEPP.

ANCDF begins disposing of chemical weapons stored at ANAD, which held seven percent of the original U.S. chemical weapons stockpile.

ABCDF begins disposing of mustard agent stored in large steel bulk containers at APG, which accounts for five percent of the original U.S. chemical weapons stockpile.

The first Single CAIS Access and Neutralization System (SCANS) treatment of CAIS item is performed at Fort McClellan, Alabama.

NSCMP completes RRS operations at Fort Richardson, Alaska, treating seven CAIS items and decontaminating 14 containers.

World War I-era chemical munitions are recovered during the U.S. Army Corps of Engineers (USACE) investigation and cleanup of the Spring Valley neighborhood in Washington, D.C.

NSCMP begins cleaning obsolete large steel bulk containers at the Pine Bluff Ton Container Decontamination Facility (PBTCDF) at PBA.

The United States meets the CWC treaty milestone to destroy 80 percent of its former chemical weapons production facilities.

2004

Eight CAIS ampoules are treated using SCANS at Holloman Air Force Base, New Mexico.

2004–2007

Single CAIS Access and Neutralization System (SCANS)

UMCDF begins disposing of chemical weapons stored at UMCD, which held 12 percent of the original U.S. chemical weapons stockpile.

TOCDF and ABCDF reach 50 percent destruction milestones for munitions and bulk agent, respectively.

NSCMP begins testing its Munitions Assessment and Processing System at APG.

EDS destroys one 75 mm mustard-filled projectile first at Dover Air Force Base (DAFB), Delaware, recovered from the ocean by commercial fisherman and found at a seafood processing plant.

2005

ABCDF destroys all drained mustard agent from the APG stockpile.

Last ton container at ABCDF

TOCDF destroys its millionth chemical agent munition at DCD. No other United States site can accomplish this as only DCD had more than a million munitions in its stockpile.

NECDF, which held four percent of the original United States chemical weapons stockpile, begins disposal operations of nerve agent VX stored in large steel bulk containers.

PBCDF begins disposal operations. PBA stored 12 percent of the original U.S. chemical stockpile.

NSCMP opens the Binary Destruction Facility at PBA to destroy the nation's remaining inventory of binary precursor chemicals DF and QL.

EDS destroys its second mustard-filled projectile at DAFB.

Positioning a weapons transport container at PBCDF

2006

SCANS destroys 38 recovered CAIS bottles in Fort Benning, Georgia.

Treaty inspectors with the Organisation for the Prohibition of Chemical Weapons verify destruction of ABCDF's hydrolysate at DuPont, marking 100 percent destruction of the APG stockpile. Demolition of all ABCDF buildings, not held for other uses, is completed.

Building 143 at NECD, the site of the final step in the VX production process, was demolished in March 2006

Treaty inspectors verify the former chemical warfare production facility at NECD has been destroyed.

The Army destroys 50 percent—more than 1.7 million—of the munitions in the original U.S. chemical weapons stockpile.

NSCMP finishes chemically neutralizing the entire United States supply of precursor chemical agents DF and QL.

The United States meets the CWC treaty requirement to destroy 100 percent of its former chemical weapons production facilities.

TOCDF begins destroying mustard agent—the last agent stockpiled at DCD.

The NSCMP Pine Bluff Explosive Destruction System (PBEDS) begins operations to treat more than 1,200 munitions at PBA.

EDS destroys six projectiles in February and seven in August at DAFB.

2007

NECD begins safe shipment of NECDF caustic wastewater to Veolia Environmental Services in Port Arthur, Texas, for final treatment and disposal.

SCANS destroys 24 CAIS ampoules at Fort Bragg, North Carolina.

The Army meets the CWC milestone of destroying 45 percent of the U.S. chemical agent stockpile.

ABCDF completes Resource Conservation and Recovery Act (RCRA) closure, becoming the first U.S. chemical demilitarization site to achieve permitted closure.

2007–2009

VX Spray tank being unloaded from its shipping container at UMCDF.

CMA officials, Veolia Environmental Services' work force and Tri-State Motor Transit drivers celebrate a half million miles safely driven—achieved transporting wastewater from the NECDF in Newport, Indiana to Veolia's Port Arthur, Texas waste treatment plant.

Safe destruction of 50 percent of United States chemical agent stockpile achieved.

More than 57,000 binary canister drums of chemical agent were destroyed.

NSCMP meets CWC 100 percent destruction deadline of all binary chemical warfare materiel.

2008

Last M55 rocket in CMA disposal mission destroyed, reducing cumulative storage risk to public by 94 percent.

PBCDF destroys the final VX-filled M23 landmine — the last nerve agent-filled munition in the PBA stockpile.

The last ton container of the Newport Chemical Depot stockpile is ready for delivery to the Newport Chemical Agent Disposal Facility.

NECDF completes its bulk nerve agent VX disposal mission and shipment of the resulting caustic wastewater for final treatment and disposal.

UMCDF destroys the final VX-filled M23 landmine—the last nerve agent-filled munitions in the UMCD stockpile.

CMA destroys all of the VX in its disposal mission inventory when ANCDF destroys its final VX-filled landmine.

EDS destroys a projectile at DAFB.

NSCMP destroys 71 RCWM items at Schofield Barracks, Hawaii, using the Transportable Detonation Chamber (TDC).

A munitions handler guides the last M23 VX landmine in the Anniston Army Depot stockpile as it heads down the conveyor.

2009

Operators complete the safe treatment of one recovered CAIS item, containing more than 20 CAIS K941 bottles filled with mustard agent, using SCANS at Redstone Arsenal, Alabama.

Veolia Environmental Services in Port Arthur, Texas, celebrates destruction of more than one million gallons of caustic wastewater from NECDF.

The Army reaches 60 percent destruction—more than 1.9 million—of the munitions in the original U.S. chemical weapons stockpile.

(From left to right) NECD Commander Lt. Col. William D. Hibner, Sergeant Major Ricardo Soto-Acevedo and CMA Director Conrad Whyne are shown casing the colors at the Newport Deactivation ceremony.

CAMDS at DCD celebrates 30 years as the primary research, test and development facility for the U.S. chemical weapons disposal program.

In October 2009, CMA celebrates the safe destruction of its two millionth munition since entry into force of the CWC.

EDS destroys one projectile at DAFB.

A ceremony was held June 15 at PBA,Arkansas, to celebrate the completion of the Pine Bluff Explosive Destruction System (PBEDS) mission.

2010–2012

2010

NECD receives a letter from the Indiana Department of Environmental Management (IDEM) stating that total closure as required by RCRA is completed.

NSCMP completes its mission at PBEDS, destroying more than 1,200 munitions at PBA—marking the destruction of all recovered non-stockpile materiel declared prior to the U.S. entry into force of the CWC.

Workers safely destroy the last explosively-configured mustard-agent filled munition at TOCDF.

NSCMP deploys the EDS to Redstone Arsenal, Alabama, to destroy munitions recovered through arsenal remediation activities.

NSCMP performs another EDS mission to destroy 23 items in Spring Valley, Washington, D.C.

CMA reaches 75 percent destruction of the munitions in the U.S. chemical weapons stockpile since entry into force of the CWC.

CMA achieves the destruction of 80 percent of the United States chemical agent stockpile since entry into force.

NSCMP uses its Portable Isotopic Neutron Spectroscopy System and the Digital Radiography and Computed Tomography System to complete an assessment mission in Columboola, Australia—assessing 144 munitions recovered there.

PBCDF safely completes disposal of the last mustard agent-filled ton container — marking the successful completion of chemical weapons disposal operations at PBA.

NSCMP completes a successful EDS mission at Camp Sibert, Alabama.

2011

TOCDF reaches a significant milestone — 11,111,111 consecutive man hours without a lost workday injury — significantly, this milestone occurred on January 11, 2011, 1/11/11. The milestone also marks more than five years without a lost workday due to an injury on the job.

Ton containers (TC) await decontamination at the Pine Bluff Ton Container Decontamination Facility at Pine Bluff Arsenal, Arkansas. Operators used magnetic induction heating to decontaminate 4,307 TCs, making them suitable for recycling.

ANCDF is inducted into the State of Alabama Engineering Hall of Fame.

CAMDS operators perform its final Demilitarization Protective Ensemble entry.

CMA commemorates the end of operations at PBCDF with a ceremony featuring recognition from CMA, PBA and AMC officials.

CMA achieves destruction of 85 percent of the U.S. chemical agent stockpile since entry into force.

DCD makes the last of more than 20,000 safe on-site container deliveries to TOCDF; and the facility destroys the last of 6,399 mustard agent-filled bulk ton containers stored at DCD.

Disposal operations for the 108 bulk containers filled with mustard agent conclude at the ANCDF.

PBTCDF completes decontaminating 4,307 ton containers, resulting in 6.5 million pounds of steel recycled, rather than shipping to a hazardous waste landfill.

National Safety Council awards TOCDF the 2011 Industry Leader Award, recognizing outstanding safety performance.

ANCDF completes disposal of the chemical weapons stockpile at ANAD, seven percent of the original U.S. chemical stockpile.

UMCDF completes disposal of the chemical weapons stockpile at UMCD, 12 percent of the original U.S. chemical stockpile.

EDS operations take place at APG.

2012

TOCDF completes disposal of the chemical weapons stockpile at DCD — 44 percent of the original U.S. chemical stockpile.

Pine Bluff Arsenal

CMA completes its Chemical Stockpile Elimination mission, destroying 89.75 percent (27,000 U.S. tons) of the nation's chemical weapons stockpile stored at seven sites. The storage mission continues at BGCA and PCD.

EDS destroys three mustard-filled projectiles at DAFB.

2012–2016

Organization reorganizes to become the U.S. Army Chemical Materials Activity (CMA).

NSCMP becomes the Recovered Chemical Materiel Directorate (RCMD).

2013

EDS operations destroy 11 recovered munitions at PBA.

Dover Air Force Base

2014

EDS destroys two mustard-filled projectiles at DAFB.

2015

EDS destroys 10 World War I and World War II era munitions at Schofield Barracks, Hawaii.

Pueblo Chemical Agent-Destruction Pilot Plant Explosive Destruction System (PCAPP EDS) starts operation.

Three recovered munitions are transported to APG from DAFB for assessment as part of an ongoing treatability study.

Loading munitions into EDS at Pine Bluff

2016

RCMD completes the first phase of PCAPP EDS destruction operation, destroying 536 munitions.

PERFORMED MORE THAN **3,300** ASSESSMENTS IN THE **UNITED STATES**

DESTROYED MORE THAN **258,000** 155 mm BINARY PROJECTILE BODIES **AT HAWTHORNE ARMY DEPOT, NV**

57,000 CANISTER DRUMS OF BINARY CHEMICALS **IN PINE BLUFF, AR**

DESTROYED **10** CHEMICAL WEAPONS PRODUCTION FACILITIES IN FIVE STATES **AL, AR, CO, MD, IN**

DESTROYED **5,529** CAIS ITEMS USING SCANS AND RRS IN **9 STATES**

DECONTAMINATED AND DESTROYED OR RECYCLED

7,824 **TON**

CONTAINERS IN MD, AR AND UT

2,700+

ITEMS TREATED

USING EDS (2,688) AND TDC (71) AS OF MARCH 2018

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